1.0 AMMOS System Strategic Goals

This section defines the four primary system goals needed to achieve the AMMOS vision, the motivation for establishing these goals and key metrics for measuring success over time against these goals. The system roadmap following the goals specifies key milestones and priorities through 2025.

1.1 System Goals with Rationale, Drivers, Areas of Focus and Metrics

1.1.1 Goal #1: Reduce Mission Operations cost and risk.

Rationale:

- Highly automated systems minimize mission cost. Standard approaches save development and ops cost and reduce risk by providing well-tested common capabilities.
- Standardized processes and procedures reduce duplication of effort for program and mission alike.
- Increased modularity minimizes overlap of design and implementation.
- Standard common security practices reduce mission cyber security risk profile

Drivers:

- Declining Planetary Science Budget
- Growing Mission Selection Uncertainty
- Increasing Security Threat

Areas of Focus:

- Reduce costs and risk for developing and operating missions
- Standardized processes and procedures for system development, deployment and operations
- Increased modularity
- Standardized Common Security practices
- Increase and expand scope of automated testing
- Strengthen AMMOS operational services through increased scope of multimission team capabilities and operational services

Metric:

- Mission cost for areas where AMMOS tools and services are employed

1.1.2 Goal #2: Leverage and be consistent with appropriate technological advances in emerging standards and computing

Rationale:

- Today's AMMOS supports many missions and can continue to support future missions. Ensuring these are maintained and improved over time allows NASA to readily compose a system at a lower cost and risk because of the availability of flight-tested capabilities.
- Improving AMMOS heritage enables allows increased cost and risk reduction.

Drivers:

- Declining Planetary Science Budget
- Growing Mission Selection Uncertainty
- Increasing Security Threat

Focus Areas:

- Exploit emerging standards and computing and networking technologies
- Reduce security risk by adoption of security standards
- Integration with and use of third-party solutions

Metric:

- AMMOS development cost.

1.1.3 Goal #3: Broaden AMMOS to Support Future Missions

Rationale:

- AMMOS is NASA's recommended provider of multimission tools and services for missions exploring our solar system and beyond. Broad mission adoption requires AMMOS to provide mission operations driven capabilities coupled with ease of adaptation and deployment.
- Providing capabilities currently not included in the AMMOS enables the AMMOS to more effectively support mission operations.
- Future mission challenges imply a need for an AMMOS that is a less human intensive enterprise, i.e., one that is significantly easier to adapt and deploy, and one that transitions functionality from the ground to space.

Drivers:

- Increase in Data Volumes and Data Rates
- Maturation and Infusion of Operations-Focused Technology
- Emerging Markets and Partnerships
- Growing Mission Selection Uncertainty

Focus Areas:

- AMMOS provides pre-packaged / integrated out of the box solutions with near immediate usability or functionality
- Support increased data volumes and data rates
- Support greater latency in data receipt and on-board knowledge
- Support increased flight autonomy

Metrics:

- New types and classes of missions supported
- Increase in AMMOS adoption at NASA centers and elsewhere

1.1.4 Goal #4: Employ a principled architectural approach to strengthen AMMOS System Integration

Rationale:

- Reduces duplicate functionality across the system.
- Helps flight projects lower operations cost by alleviating the need to create custom, mission-unique information/data management and integration capability.
- Facilitates end-to-end information/data accountability because currently individual missions implement this capability in piecemeal and inefficient ways.
- Provides partner suppliers with an interoperable technical infrastructure to bring new functionality to the AMMOS. Although the AMMOS offers tremendous value to missions as a reusable asset base of mission operations capabilities, assembling a comprehensive working system is more difficult than it should be.
- The AMMOS needs to be bound by a set of core architecture principles and the system architected to exhibit a unified “family of systems” as opposed to a collection of subsystem stovepipes.

Drivers:

- Declining Planetary Science Budget
- Increasing Security Threat
- Emerging Markets and Partnerships

Focus areas:

- Common information integration and exchange services
- Common utility services including security, workflow, logging, notification, and system-wide administration, product / data accountability reporting

Metric:

- System integration time and cost for missions employing the AMMOS